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VOL. 16 No. 2

January 14, 1966

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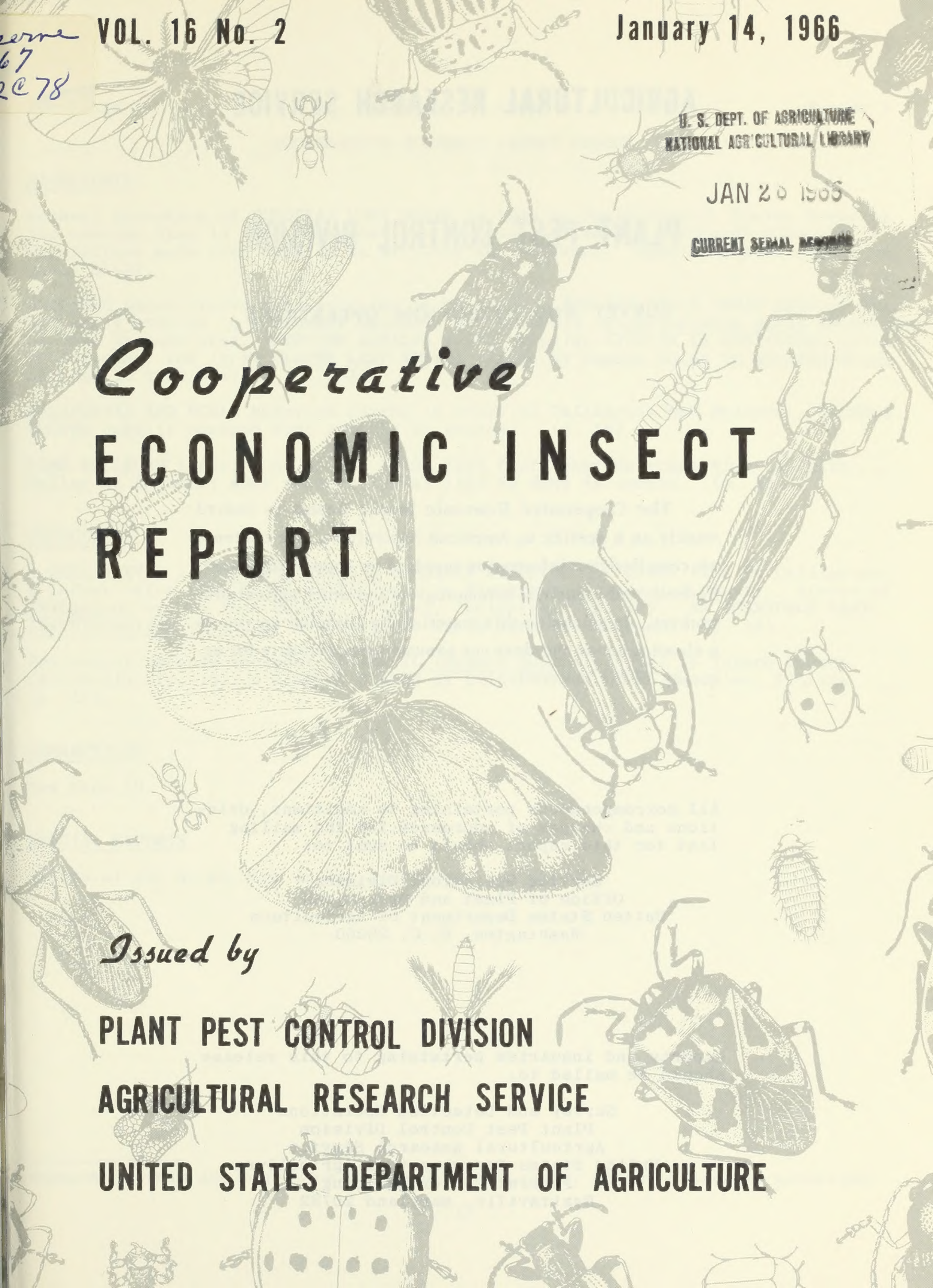

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 January 14, 1966 Number 2

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

General abundance of EUROPEAN CORN BORER in 1965 in North Central States lower on the average than in 1964. Largest single reduction was in southeast Missouri. Populations more than doubled in Maryland and Delaware. Special status report on pages 21-27.

GREENBUG necessitated some spraying in Oklahoma. ENGLISH GRAIN APHID present in all wheat checked in southwest Oklahoma and an APHID (*Rhopalosiphum padi*) increased on oats in same area. SPOTTED ALFALFA APHID damaging alfalfa in additional areas of Oklahoma, and first CLOVER LEAF WEEVIL larvae of season noted in overwintering alfalfa in that State. (p. 15).

CALIFORNIA RED SCALE heavy on citrus in areas of California and Arizona. CABBAGE LOOPER heavily damaged some lettuce in Arizona. (p. 16).

PINK BOLLWORM larva found in gin trash from field near Colorado River in Gila Valley of Arizona; most western larval find to date in county. (p. 16).

DETECTION

A BOLL WEEVIL (*Anthonomus grandis* complex) reported for first time in California; 4 larvae taken from green cotton boll in Winterhaven, Imperial County. Spread of *Anthonomus* sp. in Yuma County, Arizona, indicated. (p. 16). An ICHNEUMON WASP (*Pachysomoides stupidus*) reported for first time in Maryland. (p. 19).

New county records include: A WEEVIL (*Hypera brunneipennis*) in Tulare County, California, (p. 15); 5 ARMORED SCALES in Gilcrist and Dixie Counties, Florida, (p. 17).

CORRECTIONS

See page 19.

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 20).

Reports in this issue are for week ending January 7, unless otherwise indicated.

WEATHER OF THE WEEK ENDING JANUARY 10

HIGHLIGHTS: (1) Coldest weather of season most of East Half. Mild northern Rocky Mountains. (2) Winter storms Minnesota to New England. (3) Dry, except Pacific Northwest, gulf coast to New England.

TEMPERATURE: Bitterly cold, dry, Arctic air poured across the Canadian border bringing the coldest weather of the season to many areas over the eastern half of the Nation. Temperatures over some Eastern States dropped from 5° above normal the first half of the week to 10° to 15° below normal during the latter half. Numerous stations in northern Missouri registered subzero temperatures on Friday and Saturday. Portions of North Dakota remained below zero for 3 days; on Friday, the maximum temperatures at Fargo, North Dakota, and Minneapolis, Minnestoa, were -18° and -2°, respectively. In northeastern Montana and northwestern North Dakota, this was the second very cold week. By the weekend, the cold wave had reached the Gulf of Mexico and New Orleans, Louisiana, registered 29° Sunday morning. However, mild temperatures returned to parts of the central Great Plains on Saturday. Temperatures in eastern Colorado, western Kansas, and southeastern Wyoming climbed into the 60's on Saturday afternoon. Denver registered 65° Saturday afternoon when the maxima at Evansville, Indiana, was only 25°. Because the cold air spread southward about midweek, the weekly average temperatures east of the Rockies were mostly within 3° to 6° of normal. Meanwhile, warm Pacific air masses persisted over Wyoming and the Pacific Northwest yielding average temperatures 6° to 10° above normal over wide areas. The contrast across the Continental Divide in Montana was striking; Missoula averaged 34° or 14° above normal while Havre, only about 250 miles northeast of Missoula, averaged -2° or 18° below normal. Only the Florida Peninsula, the western gulf coast, and extreme southern portions of California escaped freezing temperatures during the week.

PRECIPITATION: Precipitation was almost continuous in the Pacific Northwest with rain along the coast and snow at higher elevations. Precipitation totals ranged from 2 to 4 inches along the Washington coast but as high as 5 to 11 inches in parts of coastal Oregon. The heavy rains produced damaging mudslides in the Puget Sound area. Snow accumulated to 150 inches above 4,500 feet in the northern Cascades where snowslides blocked highway passes several times during the week. Outside of the Pacific Northwest, precipitation was light or missing, except for light to heavy amounts southeast of a line from Austin, Texas, to Detroit. Totals of 2 inches or more occurred over most of Georgia and in the New Orleans area. Parts of the Southeast had the best rains since early October. The Northeast drought area received light to moderate precipitation amounts.

STORMS: Rain in the Southeast persisted through Thursday but ended with the arrival of cold air. Active Low centers moved eastward along the northern border during the week and a vigorous Low brought high winds and heavy snow (5 to 15 inches in eastern Massachusetts) to southern New England on Saturday. A new Low over Lake Superior was causing heavy drifting of the snow cover in that area as the week ended. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - ARKANSAS - Numbers low in most small grains in northwest. (Ark. Ins. Sur.). OKLAHOMA - Ranged 1-8 per linear foot in wheat checked in Harmon, Jackson, Tillman, Kiowa, Greer and Comanche Counties; light to moderate in wheat and barley in Kingfisher County. Some spraying done. (Okla. Coop. Sur.). TEXAS - Surveys of small grains negative in local areas of Denton County. (Turney, Meisch).

GRAIN APHIDS - ARKANSAS - Macrosiphum avenae low in small grains in northwest. (Ark. Ins. Sur.). OKLAHOMA - M. avenae present in all wheat checked in southwest; 1-19 per linear foot. Rhopalosiphum padi increased on oats in southwest; 300-500 per linear foot in scattered fields. Ranged 3-125 per linear foot in other fields in area. (Okla. Coop. Sur.).

CHINCH BUG (Blissus leucopterus) - MISSOURI - Survey showed noneconomic infestations in Adair, Schuyler, Marion, Clark and Pike Counties. Moderate numbers of hibernating forms found in Monroe County; averaged 58 per square foot. (Houser).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Present in about 33 percent of wheat checked in southwest; 3-28 per linear foot. Light to moderate in Kingfisher County. (Okla. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Moderate numbers damaging alfalfa in Payne, Kay and Washington Counties. Ranged 30-94 per square foot of crown in Tillman, Jackson and Harmon Counties. (Okla. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARKANSAS - Continues low in northwest. (Ark. Ins. Sur.). OKLAHOMA - Ranged 12-110 per square foot of crown in alfalfa checked in Tillman, Jackson and Harmon Counties; moderate in Kingfisher County. (Okla. Coop. Sur.). NEW MEXICO - Light in alfalfa south of Albuquerque, Bernalillo County; mostly winged adults. (Heninger). ARIZONA - Light to moderate numbers appearing in areas of Yuma County and western Maricopa County. (Ariz. Coop. Sur.).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Additional stems of alfalfa from northeast examined for eggs. Samples taken January 3, 1966, indicated approximately one million eggs per acre; about same as found in samples taken December 7, 1964. (Ark. Ins. Sur.).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - First larvae of season noted in overwintering alfalfa in Harmon County; averaged 25 per square foot of crown. (Okla. Coop. Sur.).

A WEEVIL (Hypera brunneipennis) - CALIFORNIA - Adults very light in Porterville, Tulare County. This is new county record and farthest north species known to occur in State. Also southern limit of range of H. postica in State. (Cal. Coop. Rpt.). ARIZONA - Adults ranged 10-60 per 100 sweeps in alfalfa. Heaviest on Yuma Mesa. Occasional adults found in Buckeye area, Maricopa County. (Ariz. Coop. Sur.).

ALFALFA LOOPER (Autographa californica) - ARIZONA - Scattered in alfalfa in Gila Valley, Yuma County; averaged 15 per 100 sweeps. (Ariz. Coop. Sur.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Infestations scattered in alfalfa in Yuma and Gila Valleys, Yuma County. Averaged 25 per 100 sweeps. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Averaged 0-1 adult per 25 sweeps in Bernalillo County alfalfa. (Heninger).

FRUIT INSECTS

Citrus Insect Situation in Florida - End of December - CITRUS RUST MITE (*Phyllocoptruta oleivora*) infested 64 percent of groves (norm 67 percent); 49 percent economic (norm 45 percent). Above average and in high range; little change expected in overall population. Infestations will become less severe, especially on fruit, but more groves will have light infestations on both leaves and fruit. Highest districts south, west and north; high on fruit, but not leaves, in east. TEXAS CITRUS MITE (*Eutetranychus banksi*) infested 39 percent of groves (norm 39 percent); 16 percent economic (norm 16 percent). Normal for yearend and expected to increase slightly. Only scattered infestations will be important. Highest districts west and north. CITRUS RED MITE (*Panonychus citri*) infested 31 percent of groves (norm 54 percent); 10 percent economic (norm 26 percent). Below normal for yearend. Expected increase will not exceed normal moderate level. All districts low. GLOVER SCALE (*Lepidosaphes gloverii*) infested 68 percent of groves; 12 percent economic. Above normal; little change expected. Highest district south. PURPLE SCALE (*L. beckii*) infested 76 percent of groves; 7 percent economic. Population normal; little change expected. Highest district south. YELLOW SCALE (*Aonidiella citrina*) infested 63 percent of groves; 16 percent economic. Above normal; increase expected. Highest district central. CHAFF SCALE (*Parlatoria pergandii*) infested 52 percent of groves; 9 percent economic. Below normal; slight increase expected. Highest district south. WHITEFLIES infested 75 percent of groves; 10 percent economic. Larval population above normal and has entered high range. Little change expected. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - CALIFORNIA - Heavy on orange trees in grove in McFarland, Kern County. (Cal. Coop. Rpt.). ARIZONA - Heavy on several backyard citrus tree plantings. Surveys initiated to delimit areas of infestations. (Ariz. Coop. Sur.).

PAPAYA FRUIT FLY (*Toxotrypana curvicauda*) - FLORIDA - Larvae in fruit of papaya at Miami Springs, Dade County. (Hancock).

TRUCK CROP INSECTS

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Continues light to moderate in lettuce in Yuma and Maricopa Counties. Few fields heavily damaged. (Ariz. Coop. Sur.).

COTTON INSECTS

WEEVILS (*Anthonomus* spp.) - CALIFORNIA - Four larvae of *A. grandis* complex taken from green cotton boll in Winterhaven, Imperial County, by L. W. Ratcliff and O. Angvall. Det. by G. Okumura, verified by D. M. Anderson. Collected December 21, 1965. This is new State record. (Cal. Coop. Rpt.). ARIZONA - Single *Anthonomus* sp. adult found by field inspection on Yuma Mesa, Yuma County. This is westernmost field find to date. (Ariz. Coop. Sur.).

PINK SCAVENGER CATERPILLAR (*Sathrobrota rileyi*) - CALIFORNIA - Medium in some cotton bolls in Brawley, Imperial County. (Cal. Coop. Rpt.).

PINK BOLLWORM (*Pectinophora gossypiella*) - ARIZONA - Larva found in gin trash from field near Colorado River in Gila Valley, Yuma County. This is most western larval find in county to date. First larvae in Queen Creek area this year collected from gin trash from western Queen Creek gin. (Ariz. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

CONIFER APHIDS (Cinara spp.) - OKLAHOMA - C. tujafilina extremely heavy on arborvitae in many central and eastern counties; light in Washita County. (Okla. Coop. Sur.). NEW MEXICO - C. tujafilina building up on arborvitae in Las Cruces area, Dona Ana County, and in Albuquerque, Bernalillo County. Honeydew a problem on sidewalks and porches. (Hare, Heninger). Cinara sp. light to moderately heavy on ornamental ponderosa pine plantings in Albuquerque area. (Heninger).

PINE BARK APHIDS (Pineus spp.) - ARKANSAS - Fairly high numbers built up in central area. (Ark. Ins. Sur.).

APHIDS - ALABAMA - Aphis spiraecola adults plentiful on spirea in Lee County; feeding on newly developing flower buds as well as old leaves. Large numbers of eggs present on stems, especially in bark crevices. Macrosiphum rosae adults and young present on all roses checked in same county; 5-25 young per leaf or bud not uncommon. (McQueen). NEW MEXICO - Lachnus salignus moderate to heavy on willows in Tucumcari area, Quay County. (Powell). ARIZONA - Macrosiphoniella sanborni heavy on ornamentals in Yuma area, Yuma County, and in Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

ARMORED SCALES - CALIFORNIA - Hemiberlesia rapax medium on native coyotebush in Tamales Bay State Park at Iverness, Marin County, and heavy on areca palm nursery stock in Pomona, Los Angeles County. Aonidiella aurantii medium on euonymus and light on laurel nursery stocks in Fresno, Fresno County. (Cal. Coop. Rpt.). FLORIDA - Eggs and adults of Ischnaspis longirostris collected on leaves of mahogany in nursery at West Hollywood, Broward County. This is new host record for Florida Division of Plant Industry. (Shirah, Dec. 3, 1964). The following collected by A. E. Graham on December 28 are new county records: Diaspis boisduvalii on Cycas revoluta, D. echinocacti on cactus and Chrysomphalus aonidum on seedling orange in nursery at Fannin Springs, Gilcrist County; Lepidosaphes camelliae on leaves of camellia at Fannin Springs and on same host at Cross City, Dixie County; Fiorinia theae on Euonymus sp. and camellia in nurseries at Cross City and on leaves of camellia in nursery at Fannin Springs. (Fla. Coop. Sur.).

A SOFT SCALE (Pulvinaria sp.) - CALIFORNIA - Heavy on poplar nursery stock in Union City, Alameda County. (Cal. Coop. Rpt.).

FOREST TENT CATERPILLAR (Malacosoma disstria) - TEXAS - Surveys indicated egg masses generally light on oak and ash trees over Fort Worth area, Tarrant County; however, masses moderate to heavy in local areas. (Turney, Meisch).

SEQUOIA PITCH MOTH (Vespamima sequoiae) - CALIFORNIA - Larvae, probably this species, medium in trunk of Monterey pine in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

SPIDER MITES - ALABAMA - Ranged 5-50 per leaf on laurelcherry throughout central area. (McQueen).

TOMATO RUSSET MITE (Aculus lycopersici) - CALIFORNIA - This and Tetranychus sp. medium on native nightshade in Highgrove, Riverside County. (Cal. Coop. Rpt.).

WHITEFLIES - ALABAMA - Nymphs heavy; 5-30 per leaf on all ornamental plantings of gardenia and most Chinese privet examined in Lee County. (McQueen).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - ARKANSAS - Continue nuisance in low areas in eastern section. Mild winter weather contributing factor. (Ark. Ins. Sur.). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period contained Aedes sollicitans, Aedes vexans, Culex salinarius and Culiseta inornata. Larval collections showed increase in floodwater species, due to great amount of rainfall past 2 weeks. *Culex salinarius* and *Culiseta inornata* predominated in light traps. (Stokes).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Light to moderate on cattle in Ottawa and Cleveland Counties. (Okla. Coop. Sur.).

STABLE FLY (*Stomoxys calcitrans*) - TEXAS - Locally heavy and annoying homeowners in Whitesboro, Grayson County. Peanut hay used as mulch apparently breeding area for infestation. (Turney, Meisch).

CATTLE LICE - ALABAMA - Problems in beef cattle herds beginning in Shelby County; heavy in many herds. (Clark). OKLAHOMA - Moderate on cattle in Stephens County, light in Ottawa and Kingfisher Counties. (Okla. Coop. Sur.). UTAH - Several thousand additional cattle treated for control in scattered localities during past 3 weeks. Some treatments systemics to control cattle grubs also. (Knowlton).

HOG LOUSE (*Haematopinus suis*) - OKLAHOMA - Heavy on hogs in Stephens County. (Okla. Coop. Sur.).

CHICKEN BODY LOUSE (*Menacanthus stramineus*) - ARKANSAS - Populations in northwest section heavier than normal and troublesome on turkeys. Few inquiries received from turkey growers. Unusual in area. (Ark. Ins. Sur., Dec. 29).

TROPICAL RAT MITE (*Ornithonyssus bacoti*) - CALIFORNIA - Light in residence at Arlington, Riverside County; heavy and biting occupants in residence at Spring Valley, San Diego County. (Cal. Coop. Rpt., Dec. 31).

HOUSEHOLD AND STRUCTURAL INSECTS

COCKROACHES - ALABAMA - Extreme populations of *Blattella germanica* reported in several Lee County homes. (McQueen). UTAH - *Supella supellectilium* infesting apartment at Logan, Cache County; also observed in school dormatory. (Knowlton).

CLOVER MITE (*Bryobia praetiosa*) - MISSOURI - Nuisance in Adair and Perry Counties. (Peters).

A BILLBUG (*Sphenophorus phoeniciensis*) - ARIZONA - Some homeowners reporting heavy migrations into homes in some areas of city of Yuma, Yuma County. (Ariz. Coop. Sur.).

SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*) - UTAH - Infestation found in home at Ogden, Weber County. (Knowlton).

EASTERN SUBTERRANEAN TERMITE (*Reticulitermes flavipes*) - ALABAMA - Swarms from 3 homes reported in Auburn, Lee County, during past 10 days; temperatures spring-like for over 15 days. (Ledbetter). MARYLAND - Infesting new home in Baltimore. (U. Md., Ent. Dept.).

STORED-PRODUCT INSECTS

ALMOND MOTH (*Cadra cautella*) - CALIFORNIA - Larvae medium in stored seed cotton in Old River, Kern County. (Cal. Coop. Rpt.).

A FALSE POWDER-POST BEETLE (*Prostephanus truncatus*) - TEXAS - Heavy on stored ear corn in Austin County. (Krampitz).

Stored-Product Insects in Alabama - RICE WEEVIL (*Sitophilus oryzae*) and CONFUSED FLOUR BEETLE (*Tribolium confusum*) increased considerably in stored grain on farms in east central counties; *S. oryzae* more noticeable. (Barwood).

BENEFICIAL INSECTS

AN ICHNEUMON WASP (Pachysomoides stupidus) - MARYLAND - Collected at Adelphi, Prince Georges County, November 20, 1965, by D. O. Cordts. Det. by L. M. Walkley. P. stupidus is parasite of Polistes exclamans (a vespid wasp). This is a new State record. Host det. by K. Krombein. (U. Md., Ent. Dept.).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - FLORIDA - Apparently well-established in Monticello area, Jefferson County; 12 positive samples submitted during November from Monticello and areas north and northeast as far as 10 miles. Some properties heavily infested. (Fla. Coop. Sur.).

LIGHT TRAP COLLECTIONS

GEORGIA (Tifton, 12/29/65-1/5/66; temp. 42-73°F.; precip. 0.6 in.; blacklight).— Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

SOUTH CAROLINA (Charleston, 12/27/65-1/2/66; temp. 28-76°F.; precip. 0.07 in.; blacklight) - Pseudaletia unipuncta 10, Spodoptera frugiperda 0, Prodenia ornithogalli 0, Agrotis ipsilon 18, Feltia subterranea 20, Peridroma saucia 0, Heliothis zea 0, H. virescens 0, Manduca sexta 0, M. quinquemaculata 0, Estigmene acrea 0, Trichoplusia ni 0.

CORRECTIONS

CEIR 15(53):1348 - A SUBTERRANEAN TERMITE (Coptotermes vastator Light) - Should read: "... was collected from a building in Honolulu, Honolulu County, ..." It is not known if this insect occurs outside of buildings in Hawaii.

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period January 2-8 a total of 8 cases was reported in the Southwestern Eradication Area; all in TEXAS as follows by county: Hidalgo 4, and 1 each in La Salle, Webb, Kleberg and Brooks. The Republic of Mexico reported 25 cases as follows by State: Sonora 1, Chihuahua 2, Coahuila 1, Tamaulipas 21. Sterile screw-worm flies released: Texas 11,366,250, Arizona 2,000,000, Mexico 80,888,000.

<table>
<tr><th></th><th colspan="2">Positive Cases</th><th colspan="2">Negative Cases</th><th colspan="2">Ratio of Positive Cases to 100 Cases Negative</th></tr>
<tr><th>Year</th><th>Current</th><th>Cumulative</th><th>Current</th><th>Cumulative</th><th>Current</th><th>Cumulative</th></tr>
<tr><td colspan="7">Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).</td></tr>
<tr><td>1964</td><td>0</td><td>0</td><td>36</td><td>52</td><td>0.00</td><td>0.00</td></tr>
<tr><td>1965</td><td>1</td><td>1</td><td>84</td><td>129</td><td>1.19</td><td>0.77</td></tr>
<tr><td>1966</td><td>8</td><td>11</td><td>29</td><td>52</td><td>27.58</td><td>21.15</td></tr>
<tr><td colspan="7">Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*</td></tr>
<tr><td>1965</td><td>37</td><td>86</td><td>33</td><td>47</td><td>112.12</td><td>182.97</td></tr>
<tr><td>1966</td><td>31</td><td>89</td><td>11</td><td>30</td><td>103.33</td><td>296.66</td></tr>
</table>

Feasibility Survey - During this period 212 cases were identified in Mexico south of the Barrier Zone as follows: Veracruz 45, Yucatan 55, Nayarit 5, Puebla 8, Durango 4, Jalisco 9, Morelos 4, Campeche 4, Guerrero 24, Oaxaca 11, Chiapas 5, Michoacan 4, Tabasco 6, San Luis Potosi 7, Hidalgo 2, Sinaloa 5, Queretaro 1, Guanajuato 1, Colima 2, Zacatecas 10.

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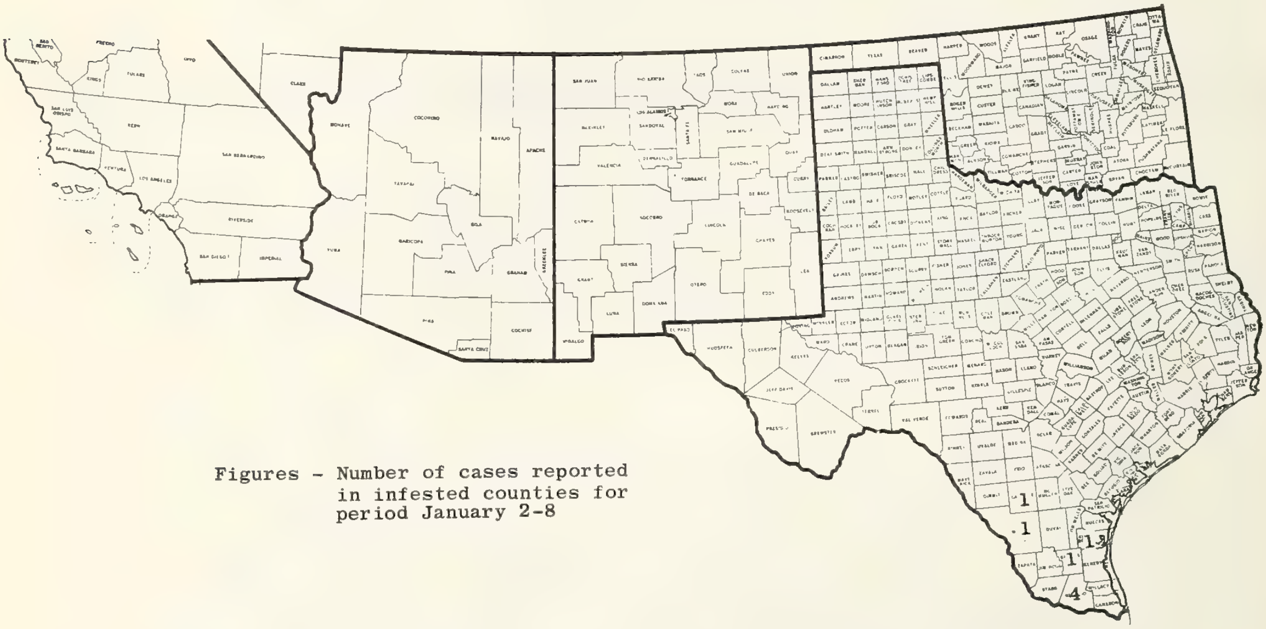
* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



Figures - Number of cases reported in infested counties for period January 2-8

STATUS OF THE EUROPEAN CORN BORER IN 1965 [1]

Introduction: Cooperating agricultural agencies in 16 States reported on surveys conducted in their States to determine the abundance and distribution of European corn borer (Ostrinia nubilalis (Hübner)) in 1965. All survey data, summaries or records of field observations were submitted to Survey and Detection Operations in Hyattsville, Maryland, for final processing. Personnel of Entomology Research Division, Agricultural Research Service, kindly reviewed the material after completion.

The 1965 European corn borer survey was conducted during the late summer and fall of the year. The survey is designed to measure the fall population of European corn borer larvae and is conducted during a time to include a high percentage of late instars, wherever possible. In all cases, except for some minor differences in compiling data, the accepted survey methods were followed. The survey was continued on a district basis whenever possible in 1965. A district is usually a group of counties within a State, in most cases based on Crop Reporting Districts.

New Distribution: European corn borer was reported for the first time from 11 new counties during 1965 according to ARS records; however, these new counties were all in South Carolina, which is already known to be infested. This was twice the number reported the previous year; 5 new counties were reported in 3 States in 1964. This compares with 25 new counties reported in 1963, 4 in 1962, 15 in 1961 and 6 in 1960.

The new counties reported infested in South Carolina in 1965 were Aiken, Allendale, Edgefield, Lexington, Newberry, Orangeburg, Pickens, Richland, Union, Williamsburg and York.

Abundance: The general abundance of European corn borer larvae in the North Central States was lower on the average than in 1964. The number of borers per 100 plants averaged 41 in 1965 compared with 82 in 1964, an overall decrease of 50 percent. The largest single reduction in borer numbers was in southeast Missouri, where the population averaged 745 borers per 100 plants in 1964 compared with 301 in 1965. This was a reduction of 444 borers per 100 plants. Some increases in populations, however, were noted in east-southeast Illinois, south central Indiana, northwest Minnesota, northwest Missouri, southeast Nebraska, northeast South Dakota and a slight increase was found in southwest Wisconsin.

The greatest increase in borer population was in east-southeast Illinois where borers averaged 67 per 100 plants compared with 18 in 1964; this was a 3.5-fold increase in numbers. Overall population levels in Illinois were approximately half those found in 1964 and those in Iowa were approximately one-third those of the same year. There were only 2 districts in the North Central States where counts of over 200 borers per 100 plants were found in 1965. These were Districts I (241) and IX (301) in Missouri. In 7 districts, borer populations were more than 100 per 100 plants, but less than 200. In all other districts in the North Central States, populations were less than 100 borers per 100 plants.

European corn borer populations more than doubled in 2 of the 3 Eastern States reporting. The State average for Delaware was 209 borers per 100 plants and that for Maryland was 117. The greatest increase in Delaware was in Kent County where the population increase was from 65 borers per 100 plants in 1964 to 249 in 1965. Vermont, the only other Eastern State reporting, had an average population of 5 borers per 100 plants. A slight increase in the European corn borer population was noted in Arkansas, especially in the east central district.

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[1] Survey data provided by State agricultural agencies. Data compiled and summarized by Survey and Detection Operations, Plant Pest Control Division, Agricultural Research Service, United States Department of Agriculture.

Table 1. Summary by States of European Corn Borer Abundance in Corn, Fall of 1965, Compared with Data for 1964

States	1964			1965			Comparable Districts or Counties Surveyed Both Years		
	No. of Districts Surveyed	Average No. of Borers Per 100 Plants	No. of Counties Surveyed	No. of Districts Surveyed	Average No. of Borers Per 100 Plants	No. of Counties Surveyed	Number	Borers Per 100 Plants 1964	Borers Per 100 Plants 1965
Eastern									
Delaware	1	98	3	1	209	3	1	98	209
Maryland	3	59	21	3	117	21	3	59	117
Total	4		24	4		24			
Average 1/								78	163
North Central									
Illinois	7	96	37	7	50	37	7	96	50
Indiana	12	60	92	12	38	92	12	60	38
Iowa	12	151	99	12	56	99	12	151	56
Kansas	3	93	25	3	48	24	3	93	48
Minnesota	7	31	67	7	22	67	7	31	22
Missouri 2/	8	157	46	8	145	46	8	157	145
Nebraska	7	84	74	7	50	74	7	84	50
North Dakota	1	125	5	1	84	5	1	125	84
Ohio	5	25	33	5	12	33	1	25	12
South Dakota	6	58	35	6	44	35	6	58	44
Wisconsin	9	13	58	9	6	52	9	13	6
Total	77		571	77		564			
Average 1/								82	41
Southern									
Arkansas	4	30	22	4	33	21	4	30	33
Others									
Vermont				1	5	13			
Michigan	1	35	32	1	41	14			

1/ Weighted averages based on districts surveyed.
2/ Figures for 1964 adjusted to include district VII.

Table 2 - European Corn Borer Abundance in Corn, Fall of 1965, Compared with Data for 1964

State (Districts or Counties)	Average Number of Borers Per 100 Plants 1964	1965
Arkansas (Ark. Ins. Sur.)		
Northwest	11	9
North Central	10	13
Northeast	62	43
East Central	37	66
Average	30	33
Delaware (Agr. Expt. Sta.)		
Kent	65	249
New Castle	51	106
Sussex	177	273
Average	98	209
Illinois (Natural History Survey, Ext. Ser.)		
Northwest	183	43
Northeast	90	21
West	133	83
Central	70	42
East	91	30
West-southwest	51	63
East-southeast	18	67
Average	91 (95)1/	50 (51)1/
Indiana (Ext. Ser., Expt. Sta.)		
North-northwest	94	41
North-northcentral	102	54
North-northeast	52	50
Northwest	41	34
North Central	33	15
Northeast	35	18
Southwest	32	23
South Central	12	26
Southeast	40	24
South-southwest	96	62
South-southcentral	119	55
South-southeast	63	48
Average	60	38
Iowa (State Dept. of Agr.; Ext. Ser.; Ent. Dept, Iowa State Univ.; ENT, ARS, USDA)		
District I	165	46
District II	71	19
District III	108	4
District IV	224	42
District V	142	37
District VI	103	68
District VII	174	37
District VIII	135	86
District IX	145	95
District X	208	30
District XI	150	103
District XII	203	108
Average	151	56
Kansas (Ins. Sur.)		
Northeast	135	93
North Central	14	19
East Central	131	31
Average	93	48
Maryland (Agr. Ext. Ser., Ins. Sur.)		
Eastern Shore	81	133
Southern area	48	115
Western and Central areas	49	103
Average	59	117
Michigan (Ins. Sur.)		
Surveyed Counties	35	41
(Survey in 1964 conducted in 32 counties; Survey in 1965 conducted in 14 counties)		

1/ Average based on 36 counties rather than districts

Table 2 - (Continued)

State (Districts or Counties)	Average Number of Borers Per 100 Plants 1964	1965
Minnesota (State Dept. Agr.)		
Northwest	43	55
West Central	52	53
Central	15	8
East Central	8	2
Southwest	62	21
South Central	35	12
Southeast	4	0.4
Average	31	22
Missouri (Ext. Ser., Ins. Sur.)		
District I	125	247
District II	78	180
District III	54	199
District IV	63	74
District V	61	70
District VI	81	52
District VII	50	40
District IX	745	301
Average	157 1/	145
Nebraska (Agr. Expt. Sta., Ext. Ser., Ins. Sur.)		
North	26	1
Northeast	98	20
Central	109	31
East	191	110
South	63	42
Southeast	93	147
Southwest	8	2
Average	84	50
North Dakota (State Dept. Agr.)		
Southeast	125	84

State (Districts or Counties)	Average Number of Borers Per 100 Plants 1964	1965
Ohio (Ext. Ser.; ARS, USDA)		
Northwest	49	11
West Central	12	6
Central	8	12
Southwest	25	17
Northeast	31	16
Average	25 (28)2/	12 (11)2/
South Dakota (Agr. Expt. Sta., Ext. Ser.)		
North Central	45	32
Northeast	55	117
Central	15	2
East Central	64	41
Southeast	99	67
South Central	69	5
Average	58 3/	44 3/
Vermont (State Dept. Agr.)		
Surveyed counties	--	5
(Survey in 1965 conducted in 13 counties).		
Wisconsin (State Dept. Agr.)		
Northwest	1	6
North Central	13	3
West Central	5	4
Central	17	11
Southwest	6	10
South Central	24	8
Southeast	26	2
East Central	9	6
Northeast	14	6
Average	13	6

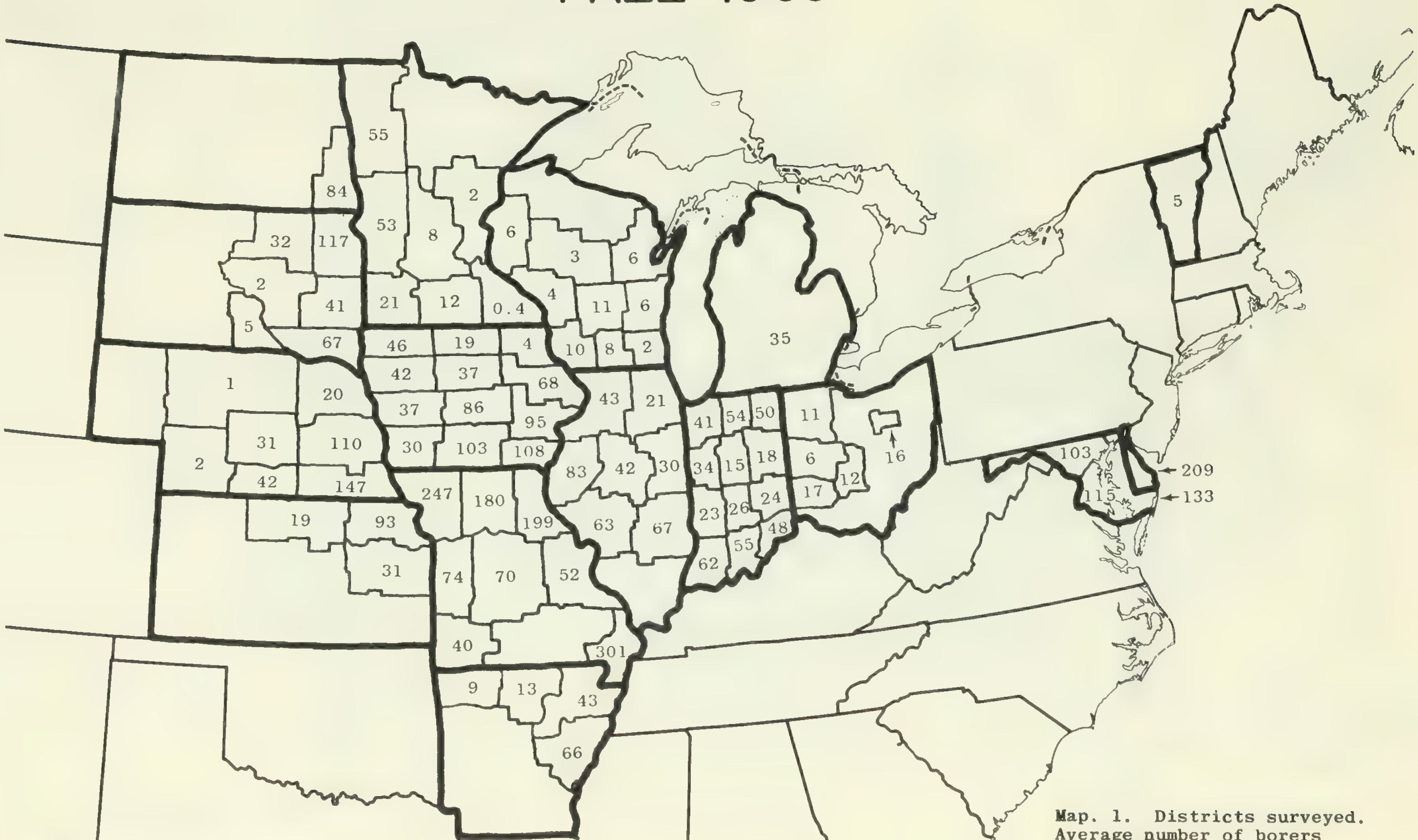
1/ Average for 1964 adjusted to include District VII.

2/ Average based on all samples rather than district averages.

3/ Average based on 35 counties.

EUROPEAN CORN BORER ABUNDANCE

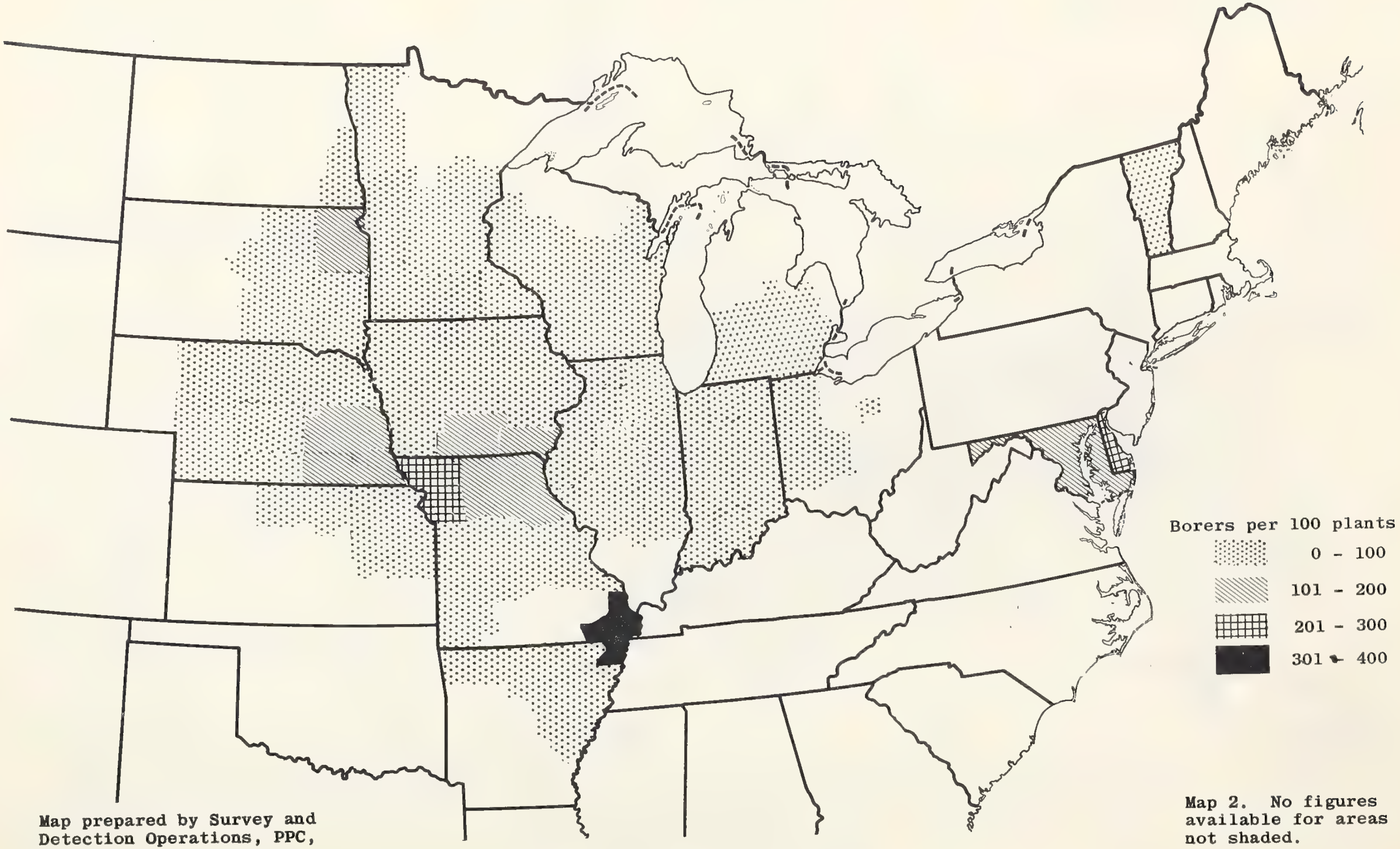
FALL 1965



Map prepared by Survey and Detection Operations, PPC, ARS, USDA, January 1966

Map. 1. Districts surveyed. Average number of borers per 100 stalks based on 1965 surveys. (Comparable figures in Table 2).

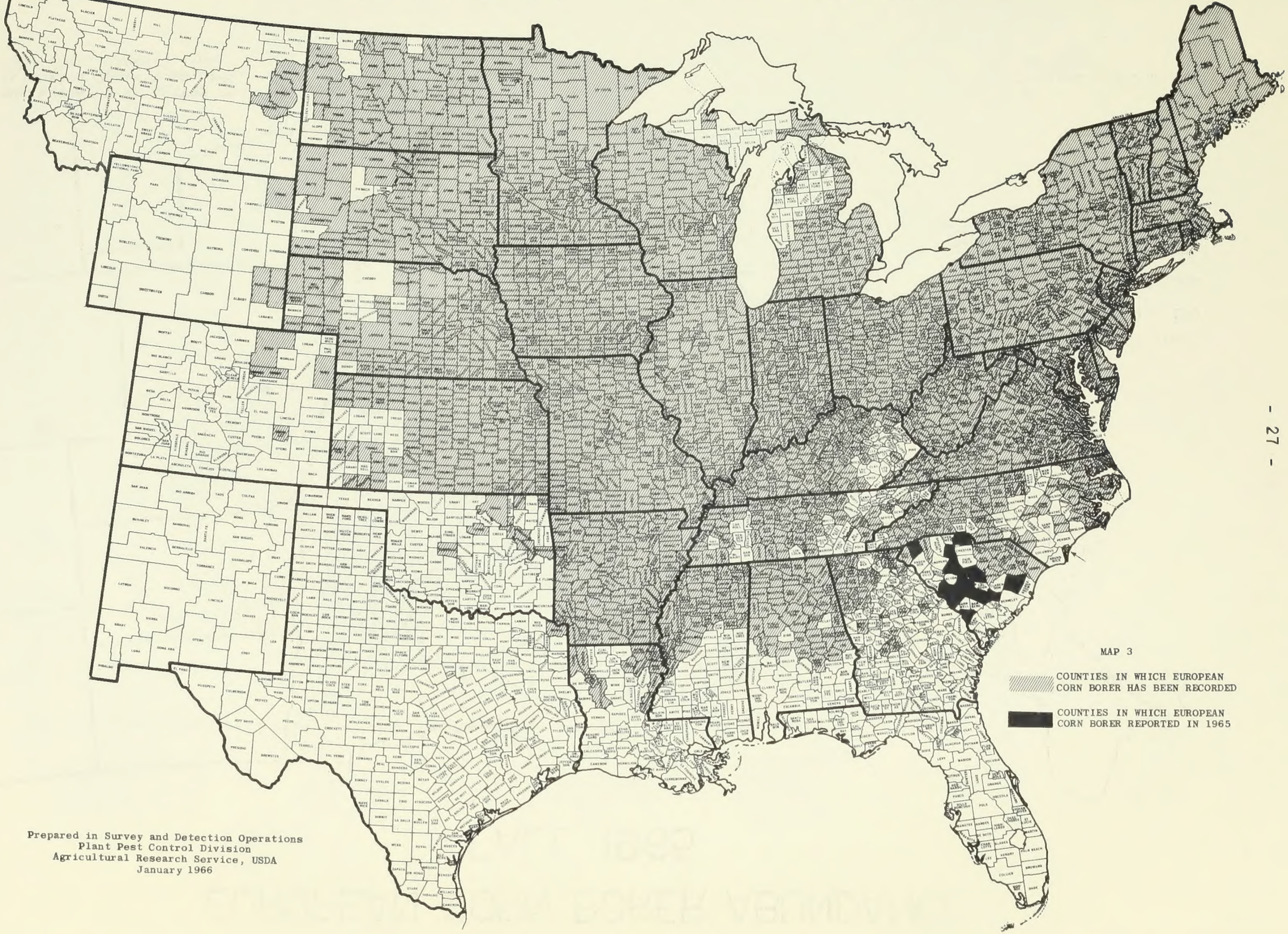
EUROPEAN CORN BORER ABUNDANCE
FALL 1965



Map prepared by Survey and
Detection Operations, PPC,
ARS, USDA, January 1966.

Map 2. No figures available for areas not shaded.

EUROPEAN CORN BORER


COUNTIES IN WHICH EUROPEAN CORN BORER HAS BEEN RECORDED
COUNTIES IN WHICH EUROPEAN CORN BORER REPORTED IN 1965

MAP 3

Prepared in Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service, USDA
January 1966

UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Maryland 20782

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